

WHAT IS CLAIMED IS:

1. A method of filling a tooling with a granular media, comprising:
filling a contained volume with a first granular media;
attaching the contained volume in a portion of the tooling; and
filling the tooling with a second granular media.
2. The method of claim 1, further comprising:
identifying a portion of the tooling likely to form a void pocket of media when filled with the second granular media; and
wherein attaching the contained volume further comprises attaching the contained volume in the portion of the tooling likely to form a void pocket of media prior to filling the tooling with the second granular media.
3. The method of claim 1, further comprising
applying a vacuum to the tooling.
4. The method of claim 1, further comprising
applying air pressure to the tooling.
5. The method of claim 1, wherein the contained volume comprises a flexible bag formed of a porous fabric.
6. The method of claim 5, wherein the porous fabric is formed of a fiberglass cloth weave.
7. The method of claim 5, wherein the porous fabric is formed of a metallic screen.
8. The method of claim 5, wherein the porous fabric is formed of a plastic film.
9. The method of claim 1, wherein attaching further comprises attaching the contained volume with a bonding agent.
10. The method of claim 9, wherein the bonding agent comprises RTV silicone.
11. The method of claim 1, wherein the tooling is a tooling for an aircraft structure.

12. The method of claim 1, wherein the first and second granular media comprise the same material.
13. An apparatus for filling a tooling with a granular media, comprising:
 - a first filling component configured to fill a contained volume with a first granular media;
 - an attaching component configured to attach the contained volume in a portion of the tooling; and
 - a second filling component configured to fill the tooling with a second granular media.
14. The apparatus of claim 13, further comprising:
 - an identifying component configured to identify a portion of the tooling likely to form a void pocket of media when filled with media; and
 - wherein the attaching component is configured to attach the contained volume in the portion of the tooling likely to form a void pocket of media prior to filling the tooling with the second granular media.
15. The apparatus of claim 13, further comprising
 - an applying component configured to apply a vacuum to the tooling.
16. The apparatus of claim 13, further comprising
 - an applying component configured to apply air pressure to the tooling.
17. The apparatus of claim 1, wherein the contained volume comprises a flexible bag formed of a porous fabric.
18. The apparatus of claim 17, wherein the porous fabric is formed of a fiberglass cloth weave.
19. The apparatus of claim 17, wherein the porous fabric is formed of a metallic screen.
20. The apparatus of claim 17, wherein the porous fabric is formed of a plastic film.
21. The apparatus of claim 13, wherein the attaching component is configured to attach the contained volume with a bonding agent.

22. The apparatus of claim 21, wherein the bonding agent comprises RTV silicone.

23. The apparatus of claim 13, wherein the tooling is a tooling for an aircraft structure.

24. The apparatus of claim 13, wherein the first and second granular media comprise the same material.

25. A computer-implemented method of filling a tooling with a granular media, comprising:

filling a contained volume with a first granular media;
attaching the contained volume in a portion of the tooling; and
filling the tooling with a second granular media.

26. An apparatus for filling a tooling with a granular media, comprising:
a first filling means for filling a contained volume with a first granular media;

an attaching means for attaching the contained volume in a portion of the tooling; and

a second filling means for filling the tooling with a second granular media.

27. A method of filling a tooling with a media, comprising:

identifying a portion of the tooling likely to form a void pocket of media when filled with a granular media;

filling a contained volume with a first granular media;

attaching the contained volume in the portion of the tooling likely to form a void pocket of media prior to filling the tooling with a second granular media; and

filling the tooling with the second granular media.

28. The method of claim 27, further comprising

applying a vacuum to the tooling.

29. The method of claim 27, further comprising

applying air pressure to the tooling.

30. The method of claim 27, wherein the contained volume comprises a flexible bag formed of a porous fabric.

31. The method of claim 30, wherein the porous fabric is formed of a fiberglass cloth weave.

32. The method of claim 30, wherein the porous fabric is formed of a metallic screen.

33. The method of claim 30, wherein the porous fabric is formed of a plastic film.

34. The method of claim 27, wherein attaching further comprises attaching the contained volume with a bonding agent.

35. The method of claim 34, wherein the bonding agent comprises RTV silicone.

36. The method of claim 27, wherein the tooling is a tooling for an aircraft structure.

37. The method of claim 27, wherein the first and second granular media comprise the same material.

38. An apparatus for filling a tooling with a media, comprising:

an identifying component configured to identify a portion of the tooling likely to form a void pocket of media when filled with a granular media;

a first filling component configured to fill a contained volume with a first granular media;

an attaching component configured to attach the contained volume in the portion of the tooling likely to form a void pocket of media prior to filling the tooling with a second granular media; and

a second filling component configured to fill the tooling with the second granular media.

39. The apparatus of claim 38, further comprising

an applying component configured to apply a vacuum to the tooling.

40. The apparatus of claim 38, further comprising

an applying component configured to apply air pressure to the tooling.

41. The apparatus of claim 38, wherein the contained volume comprises a flexible bag formed of a porous fabric.

42. The apparatus of claim 41, wherein the porous fabric is formed of a fiberglass cloth weave.

43. The apparatus of claim 41, wherein the porous fabric is formed of a metallic screen.

44. The apparatus of claim 41, wherein the porous fabric is formed of a plastic film.

45. The apparatus of claim 38, wherein the attaching component is configured to attach the contained volume with a bonding agent.

46. The apparatus of claim 45, wherein the bonding agent comprises RTV silicone.

47. The apparatus of claim 38, wherein the tooling is a tooling for an aircraft structure.

48. The apparatus of claim 38, wherein the first and second granular media comprise the same material.

49. A computer-implemented method of filling a tooling with a media, comprising:

identifying a portion of the tooling likely to form a void pocket of media when filled with a granular media;

filling a contained volume with a first granular media;

attaching the contained volume in the portion of the tooling likely to form a void pocket of media prior to filling the tooling with a second granular media; and

filling the tooling with the second granular media.

50. An apparatus for filling a tooling with a media, comprising:

an identifying means for identifying a portion of the tooling likely to form a void pocket of media when filled with a granular media;

a first filling means for filling a contained volume with a first granular media;

an attaching means for attaching the contained volume in the portion of the tooling likely to form a void pocket of media prior to filling the tooling with a second granular media; and

a second filling means for filling the tooling with the second granular media.

51. A method of manufacturing a fuselage using a tooling, comprising:

preparing the tooling;

filling a contained volume with a first granular media;

attaching the contained volume in a portion of the tooling;

filling the tooling with a second granular media;

applying a curable resin to a fiber;

applying the fiber over the tooling to form the fuselage;

curing the fuselage;

removing the media from the tooling; and

extracting the tooling from the fuselage.

52. The method of claim 51, further comprising:

identifying a portion of the tooling likely to form a void pocket of media when filled with the second granular media; and

wherein attaching the contained volume further comprises attaching the contained volume in the portion of the tooling likely to form a void pocket of media prior to filling the tooling with the second granular media.

53. The method of claim 51, further comprising

applying a vacuum to the tooling.

54. The method of claim 51, further comprising

applying air pressure to the tooling.

55. The method of claim 51, wherein the contained volume comprises a flexible bag formed of a porous fabric.

56. The method of claim 55, wherein the porous fabric is formed of a fiberglass cloth weave.

57. The method of claim 55, wherein the porous fabric is formed of a metallic screen.

58. The method of claim 55, wherein the porous fabric is formed of a plastic film.

59. The method of claim 51, wherein attaching further comprises attaching the contained volume with a bonding agent.

60. The method of claim 59, wherein the bonding agent comprises RTV silicone.

61. The method of claim 51, wherein the first and second granular media comprise the same material.

62. A system for manufacturing a fuselage using a tooling, comprising:
- a preparing component configured to prepare the tooling;
 - a first filling component configured to fill a contained volume with a first granular media;
 - an attaching component configured to attach the contained volume in a portion of the tooling;
 - a second filling component configured to fill the tooling with a second granular media;
 - a first applying component configured to apply a curable resin to a fiber;
 - a second applying component configured to apply the fiber over the tooling to form the fuselage;
 - a curing component configured to cure the fuselage;
 - a removing component configured to remove the media from the tooling; and
 - an extracting component configured to extract the tooling from the fuselage.

63. The system of claim 62, further comprising:

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an identifying component configured to identify a portion of the tooling likely to form a void pocket of media when filled with media; and

wherein the attaching component is configured to attach the contained volume in the portion of the tooling likely to form a void pocket of media prior to filling the tooling with the second granular media.

64. The system of claim 62, further comprising

a third applying component configured to apply a vacuum to the tooling.

65. The system of claim 62, further comprising

a third applying component configured to apply air pressure to the tooling.

66. The system of claim 62, wherein the contained volume comprises a flexible bag formed of a porous fabric.

67. The system of claim 66, wherein the porous fabric is formed of a fiberglass cloth weave.

68. The system of claim 66, wherein the porous fabric is formed of a metallic screen.

69. The system of claim 66, wherein the porous fabric is formed of a plastic film.

70. The system of claim 62, wherein the attaching component is configured to attach the contained volume with a bonding agent.

71. The system of claim 70, wherein the bonding agent comprises RTV silicone.

72. The system of claim 62, wherein the first and second granular media comprise the same material.

73. A computer-implemented method of manufacturing a fuselage using a tooling, comprising:

preparing the tooling;

filling a contained volume with a first granular media;

attaching the contained volume in a portion of the tooling;

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filling the tooling with a second granular media;
applying a curable resin to a fiber;
applying the fiber over the tooling to form the fuselage;
curing the fuselage;
removing the media from the tooling; and
extracting the tooling from the fuselage.

74. A system for manufacturing a fuselage using a tooling, comprising:
- a preparing means for preparing the tooling;
 - a first filling means for filling a contained volume with a first granular media;
 - an attaching means for attaching the contained volume in a portion of the tooling;
 - a second filling means for filling the tooling with a second granular media;
 - a first applying means for applying a curable resin to a fiber;
 - a second applying means for applying the fiber over the tooling to form the fuselage;
 - a curing means for curing the fuselage;
 - a removing means for removing the media from the tooling; and
 - an extracting means for extracting the tooling from the fuselage.